

REMARKS

The Non-Final Office Action mailed August 25, 2009 considered and rejected claims 7, 12, 13, and 15-17. Claims 7, 12, 13 and 15-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumoto et al., U.S. Patent No. 5,912,931 (filed Aug. 1, 1996) (hereinafter Matsumoto) in view of Baker et al., U.S. Patent No. 5,067,139 (filed Dec. 17, 1990) (hereinafter Baker).¹

By this response, claims 7, 12-13, and 15-17 are cancelled² and claims 18-26 are newly presented. Claims 18-26 remain pending. Claims 18, 21, 23, and 25 are independent claims which remain at issue. Support for the newly presented claims may be found, *inter alia*, within Specification ¶¶ 0009, 0240-0250, Table 5, and Figure 4A.³

In particular, as to claim 18, support for the elements of the newly presented claim is indicated parenthetically within the text of the claim:

18. (New) A digital radio communication system ([0009]) comprising:
means for transmitting, on a transmitting side ([0009]), a block consisting of a plurality of known pilot symbols at every slot, a predetermined number of said slots forming a frame (**Figure 4A**);
means for receiving, on a receiving side, said blocks each consisting of said pilot symbols ([0009] and [0243]); and
means for carrying out coherent detection using the received blocks ([0245]);

¹ Although the prior art status of the cited art is not being challenged at this time, Applicant reserves the right to challenge the prior art status of the cited art at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of the cited art.

² Please note that the cancellation of any claims does not evince any concession on the part of the Applicants as to the asserted teachings of any cited art or the rejections of record. The cancellation of claims notwithstanding, particular aspects of the rejections of record are discussed as appropriate herein. The Applicants hereby reserve the right to pursue any cancelled subject matter or scope at such a time as may be considered desirable or appropriate.

³ Please note that the paragraph numbers as used herein are taken from the published application, U.S. Pat. Pub. No. 2004/0085916 (May 6, 2004). It should also be noted that the present invention and claims as recited take support from the entire Specification. As such, no particular part of the Specification should be considered separately from the entirety of the Specification.

wherein said block consisting of said pilot symbols consists of a known pilot symbol portion and a sync word portion for frame alignment ([0241] and Table 5);

wherein said means for carrying out coherent detection carries out the coherent detection using said known pilot symbol portion ([0245]), and employs, after establishing the frame alignment using said sync word portion, said sync word portion for the coherent detection ([0247]).

As to claim 19, in particular, support for the elements of the newly presented claim is indicated parenthetically:

19. (New) The digital radio communication system as claimed in claim 18, wherein said pilot symbol portion and said sync word portion are transmitted alternately in said block ([0009] and Table 5).

The support, as indicated above with respect to claims 18 and 19, is also applied *mutatis mutandis* to the corresponding elements of independent and dependent claims 20–26.

Although newly presented, there is a relationship between the claims cancelled and the claims newly presented. The relationship is as follows:

<u>New Claim</u>	<u>Former Claim</u>
18	7
19	16
20	-
21	12
22	-
23	13
24	17
25	15
26	-

It may be noted that "A communication apparatus" in former claim 12 corresponds to "A receiver" in newly presented claim 21. "A communication method" in former claim 15 corresponds to "A reception method" in newly presented claim 25.

The newly presented independent claims 18, 21, 23, and 25 each state that (i) a block consists of a plurality of known pilot symbols, (ii) the block is transmitted at every slot, and (iii) the block consists of a known pilot symbol portion and a sync word portion for frame alignment. The Applicants submit that these characteristics are not taught or suggested by Matsumoto and Baker, when taken either separately or in combination.

Regarding (ii) above, the Examiner stated that the subcarrier in Matsumoto is equivalent to the slot as recited in the independent claims. The Applicants respectfully submit, however, that this understanding is incorrect. The subcarrier of Matsumoto is a frequency subband which is one among the consecutive subbands used in a multicarrier communication.⁴ This is distinct, in contrast, from the claimed slot of the present invention which means a time period.

Regarding (i) and (iii) above, the Examiner stated that Matsumoto discloses the pilot symbols 41 and the unique word. However, the pilot symbols and the unique words in Matsumoto are spaced apart from each other.⁵ In contrast, in the present invention as recited in the claims, a single block consists of a pilot symbol portion and a sync word portion. Therefore, the alignment of the pilot symbol portion and the sync word portion in the present invention as recited in the claims is different from the alignment of the pilot symbols and the unique words in Matsumoto.

Baker, it should be noted, does not disclose pilot symbols at all.⁶

Based on the above-described distinctions between the present invention as recited in the claims and the cited references, configuring a sync word portion as a part of the pilot symbols achieves certain beneficial effects.⁷ On the transmission side, since the block which consists of a pilot symbol portion and a sync word portion is generated at one time, the transmission overhead can be reduced and the data transmission efficiency can be improved, in comparison with generating pilot symbols and a sync word independently. On the reception side, since the sync word portion is employed for the coherent detection in addition to the pilot symbol portion after establishing the frame alignment which was achieved by the sync word portion, there is no need to distinguish between the pilot symbol portion and the sync word portion in order to carry out coherent detection, and thus, the overhead for coherent detection can be reduced.

As discussed above, the Applicants submit that the embodiments of the present invention as recited in the claims as now presented are not taught or suggested by any of the cited references when taken either separately or in combination. Further, the cited references cannot achieve the beneficial effects which are achieved by the present invention as recited in the

⁴ See Matsumoto Col. 1 and Figure 1.

⁵ See Matsumoto Figure 7.

⁶ See, *generally*, Baker.

⁷ See Specification ¶¶ 0009 & 0242.

claims. Accordingly, the Applicants submit that the claims as now presented are patentable over the references cited.

In view of the foregoing, the Applicants respectfully submit that the other rejections to the claims are now moot and do not, therefore, need to be addressed individually at this time. It will be appreciated, however, that this should not be construed as the Applicants acquiescing to any of the purported teachings or assertions made in the last action regarding the cited art or the pending application, including any official notice. Instead, the Applicants reserve the right to challenge any of the purported teachings or assertions made in the last action at any appropriate time in the future, should the need arise. Furthermore, to the extent that the Examiner has relied on any Official Notice, explicitly or implicitly, the Applicants specifically request that the Examiner provide references supporting the teachings officially noticed, as well as the required motivation or suggestion to combine the relied upon notice with the other art of record.

In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at (801) 533-9800.

The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to Deposit Account No. 23-3178: (1) any filing fees required under 37 CFR § 1.16; and/or (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested, please consider this a petition therefore and charge any additional fees that may be required to Deposit Account No. 23-3178.

Dated this 23rd day of November, 2009.

Respectfully submitted,



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